

Claims

- [c1] A method of operating an Internet Protocol (IP) network comprising a plurality of routers, each router further comprising a plurality of interfaces, the method comprising the steps of:
 - connecting a spare interface on a first router in the IP network to a re-configurable transport network which provides connectivity to a spare interface on a second router in the IP network;
 - upon detection of a pre-designated condition in the IP network, switching traffic designated for a primary interface at the first router to the spare interface at the first router in the IP network, thereby causing the traffic to flow across spare capacity on the re-configurable transport network between the spare interface on the first router and the spare interface on the second router in the IP network.
- [c2] The method of claim 1 wherein the pre-designated condition is a failure in the primary interface at the first router in the IP network.
- [c3] The method of claim 2 wherein the primary interface provided connectivity to the re-configurable transport

network before failure and wherein the spare interface provides 1:N interface protection.

- [c4] The method of claim 2 wherein the primary interface provided connectivity over a direct point-to-point link and wherein the spare interface provides dynamic establishment of a new IP link in response to the failure.
- [c5] The method of claim 1 wherein the pre-designated condition is a surge in traffic across the primary interface at the first router in the IP network.
- [c6] The method of claim 1 wherein the re-configurable transport network comprises a plurality of optical cross-connects.
- [c7] A device-readable medium storing program instructions for performing a method of operating a router in an Internet Protocol (IP) network, the router further comprising a routing table and a plurality of interfaces including a spare interface providing connectivity through a re-configurable transport network to a spare interface on a second router in the IP network, the method comprising the steps of:
 - receiving a signal indicating a pre-designated condition in the IP network;
 - reconfiguring the routing table in the router so as to

switch traffic designated for a primary interface at the router to the spare interface at the router, thereby causing the traffic to flow across spare capacity on the re-configurable transport network between the spare interface on the router and the spare interface on the second router in the IP network.

- [c8] The device-readable medium of claim 7 wherein the pre-designated condition is a failure in the primary interface at the first router in the IP network.
- [c9] The device-readable medium of claim 8 wherein the primary interface provided connectivity to the re-configurable transport network before failure and wherein the spare interface provides 1:N interface protection.
- [c10] The device-readable medium of claim 8 wherein the primary interface provided connectivity over a direct point-to-point link and wherein the spare interface provides dynamic establishment of a new IP link in response to the failure.
- [c11] The device-readable medium of claim 7 wherein the pre-designated condition is a surge in traffic across the primary interface at the first router in the IP network.
- [c12] An Internet Protocol (IP) router comprising:

a plurality of interfaces including at least one primary interface and a spare interface providing connectivity through a re-configurable transport network to a spare interface on a second router in an IP network; a routing table that, upon receipt at the router of a signal indicating a pre-designated condition in the IP network, is reconfigured so as to switch traffic designated for a primary interface at the router to the spare interface at the router, thereby causing the traffic to flow across spare capacity on the re-configurable transport network between the spare interface on the router and the spare interface on the second router in the IP network.

- [c13] The router of claim 12 wherein the pre-designated condition is a failure in the primary interface at the first router in the IP network.
- [c14] The router of claim 13 wherein the primary interface provided connectivity to the re-configurable transport network before failure and wherein the spare interface provides 1:N interface protection.
- [c15] The router of claim 13 wherein the primary interface provided connectivity over a direct point-to-point link and wherein the spare interface provides dynamic establishment of a new IP link in response to the failure.

[c16] The device-readable medium of claim 12 wherein the pre-designated condition is a surge in traffic across the primary interface at the first router in the IP network.